

REMARKS

In the Action, claims 1-14 are rejected. In response, claims 1-10 are amended, and claim 11 is cancelled. The pending claims are claims 1-10 and 12-14. In view of these amendments and the following comments, reconsideration is requested.

Objections to Abstract, Disclosure and Title

The abstract has been revised and shortened as required. The specification has been amended on pages 14, 19 and 20 as required. The title of the invention has been amended as suggested by the Examiner. Applicants request the objections to the abstract, disclosure and title be withdrawn.

Claim Objections

Claims 5, 10 and 11 are objected to as being informal. Claim 5 has been amended to remove the objection, while claim 11 has been cancelled and its subject matter incorporated into claim 8. Claims 6, 7 and 9 have been amended in the same manner as claim 5. However, it is noted that the expression “press on a filter”, that was objected to is, in fact, correct. As indicated on page 11, lines 5-7 of the present application, a dehydrator/concentrator, such as a dewatering press is used, which is a press on a filter. Accordingly, it is requested that the objections to claims 5, 10 and 11 be withdrawn.

Rejection Under 35 U.S.C. § 112

Claims 1, 3 and 4 are rejected as being indefinite as to the term “the impregnated chemical liquor.” Claim 1 has been amended to obviate this rejection, which now can be withdrawn.

Rejection of Claims 1, 2, 8 and 12 Under 35 U.S.C. § 103

Claims 1, 2, 8 and 12 are rejected over WO Publication 90/02835 of Danielsson et al in view of U.S. Patent No. 4,789,429 to Jackson et al.

The Examiner relies on Jackson et al, as disclosing the claimed invention, except for not expressly disclosing the claimed pH range for impregnation. It is concluded that it would be obvious to use the 6-12 pH range of Jackson et al in the Danielsson et al process in view of the disclosure in Danielsson et al at page 2, line 32, to page 3, line 1, that the alkali charge is determined by the shives content and fiber distribution number.

The present invention, as recited in claim 1 as currently amended, involves an impregnation step using a chemical liquor comprising a chelating agent and compressing the chips, immersing the chips under compression or after compression in the chemical liquor and releasing pressure to impregnate them with the chemical liquor. Also, claim 1 recites that removal of the impregnated chemical liquor comprises compressing the chips impregnated with the chemical liquor to drain the impregnating chemical liquor from the chips, thereby extracting/removing flavonoids, lignin and/or metals (including metal ions) from the hard bleaching chips, as disclosed on page 6, lines 12-21 of the present application.

Danielsson et al disclose as pretreatment of manufacturing chemi-mechanical pulp from hardwood, impregnation of wood material in the form of chips with 15-40 kg of NaOH and 0-30 kg of Na₂SO₃ per ton pulp. However, Danielsson et al do not disclose use of a chelating agent. As indicated on page 8, lines 17-22 of the present application, treatment with a chelating agent at pH 7-12 in aqueous solution has the effect of inhibiting complexation of flavonoids with metal ions to prevent coloration by extracting flavonoids and simultaneously removing metal ions in the extracts with the chelating agent. Further, the present application indicates (page 8, line 28 to page 9, line 7) that bleaching is achieved by oxidative decomposition of lignin in wood with an alkaline peroxide, but the alkaline

peroxide is decomposed by the catalytic action of any coexisting metal ions to decrease the bleaching efficiency. However, "...treatment with a chelating agent also has the effect of improving the efficiency of alkaline peroxide bleaching agents in the bleaching step." (page 9, lines 4-7 of the present application).

Jackson et al do not remedy the deficiencies of Danielsson et al, since Jackson et al neither disclose use of a chelating agent nor the advantages of using a chelating agent, as discussed above.

Claim 8 is amended to include the recitations of cancelled dependent claim 11, and recite that such the defibrated pulp is diluted with water at a temperature of 5-95 °C to a concentration of 0.5-5.0 %, and is dehydrated by a press on a filter and such that the washing efficiency is 52.6-99.2 %. As pointed on page 10, line 26 to page 11, line 11 of the present application, and particularly at page 11, lines 3-5, anionic trashes, such as polyphenols derived from extractives of wood chips having low bleachability are removed.

Neither Danielsson et al nor Jackson et al disclose such claimed feature of the invention recited in claim 8. It is noted that cancelled claim 11(now incorporated in amended claim 8) was rejected over a five-reference combination, with reliance on the washing efficiency of U.S. Patent No. 4,812,206 to Devic et al.

Devic et al disclose that the washing efficiency after bleaching treatment using a reducing agent is greater than 96%. The purpose of Devic et al is to remove a remaining reducing agent which has an adverse affect on bleaching by an oxidizing agent and not to remove a material originally contained in the pulp, which inhibits bleaching , such as polyphenols derived from extractives of wood chips having low bleachability.

Claim 12 is dependent from claim 8, and even further distinguishes the combination of Danielsson et al and Jackson et al for the foregoing reasons.

Accordingly, it is requested that the rejection of claims 1, 8 and 12 as being unpatentable over Danielsson et al in view of Jackson et al be withdrawn.

Rejection of Claims 3 and 4 Under 35 U.S.C. § 103

Claims 3 and 4 are rejected over Danielsson et al and Jackson et al in further view of Sabourin U.S. Publication 2001/0050151.

As indicated above, Danielsson et al and Jackson et al are deficient for failing to disclose use of a chelating agent. Claims 3 is dependent from claim 1 and claim 4 is ultimately dependent from claim 1, which requires use of a chelating agent.

Sabourin does not cure such deficiency. Sabourin discloses a method of compressing wood chips in the range of from 4:1 to 8:1 of the non-compressed volume of the conditioned feed material, and releasing pressure to impregnate the wood chips with a chemical liquor. However, Sabourin does not disclose use of a chelating agent, nor a step of compressing the chips impregnated with the chemical liquor to drain the impregnating chemical liquor from the chips.

Page 7 of the Office Action states that Sabourin discloses (page 4, col. 1, lines 9 to 11) the step of removing the impregnating chemical liquor comprises compressing the chips impregnated with the chemical liquor. However, the step of compressing the chips impregnated with the chemical liquor to drain the impregnating chemical liquor from the chips is not found at the cited portion of Sabourin.

Accordingly, it is requested that the rejection of claims 3 and 4 over Danielsson et al and Jackson et al in further view of Sabourin be withdrawn.

Rejection of Claims 5, 6, 9 and 13 Under 35 U.S.C. § 103

The rejection of claims 5, 6, 9 and 13 over Danielsson et al and Jackson et al and further view of U.S. Patent No. 4,160,693 to Lindahl et al and Rydholm (Pulping Processes, 1967, Interscience Publishers), should be withdrawn. Claims 5 and 6 are dependent from claim 1, and the deficiencies of Danielsson et al and Jackson et al have been discussed above. Apparently, Lindahl et al and Rydholm are relied on as showing various types of wood chips. However, neither Lindahl et al nor Rydholm discloses use of chelating agent nor remedies the deficiencies of Danielsson et al and Jackson et al. Thus, it is requested that the rejection of claims 5 and 6 be withdrawn.

Likewise, the rejection of claims 9 and 13 should be withdrawn, since such claims depend from claim 8, and neither Lindahl et al nor Rydholm remedy the deficiencies of Danielsson et al and Jackson et al as to the features of amended claim 8 for the reasons given above.

Rejection of Claims 7, 10 and 14 Under 35 U.S.C. § 103

The rejection of claim 7, which depends from claim 1, as unpatentable over Danielsson et al, Jackson et al and Sabourin and further in view of Lindahl et al and Rydholm should be withdrawn, since the deficiencies of all such references has been discussed.

Likewise, the rejection of claims 10 and 14 as being unpatentable over Danielsson et al and Jackson et al in view of Devic et al should be withdrawn. Claims 10 and 14 depend from claim 8, and the deficiencies of Danielsson et al, Jackson et al and Devic et al have been discussed above in connection with amended claim 8. Support for the amendment to claim 10 is found on page 11, lines 10-11 of the present application. Accordingly, it is requested that the rejection of claims 10 and 14 be withdrawn, as well.

In view of the amendments and the above comments, reconsideration and allowance are requested.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "David S. Abrams", written over a horizontal line.

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